

WHAT IS CLAIMED IS:

1. An expandable cage for an embolic filtering device used to capture embolic debris in a body vessel, the cage comprising:
  - a circumferential member adapted to move between a collapsed position and an expanded position, the circumferential member including a plurality of bending regions formed therein;
  - a proximal strut attached to the circumferential member; and
  - a distal strut attached to the circumferential member.
2. The cage of claim 1, wherein the proximal strut and distal strut are attached to the circumferential member at bending regions.
3. The cage of claim 1, wherein the proximal strut has a free end which is adapted to be rotatably mounted on an elongated member.
4. The cage of claim 1, further including a plurality of proximal struts attached to bending regions located on the circumferential member.
5. The cage of claim 1, further including a plurality of distal struts attached to bending regions located on the circumferential member.

6. The cage of claim 1, further including a second circumferential member attached to the first mentioned circumferential member, the second circumferential member including a plurality of bending regions formed therein; wherein the distal strut is attached to the second circumferential member.

7. The cage of claim 6, wherein the proximal strut is attached to the first circumferential member at a bending region and the distal strut is attached to the second circumferential member at a bending region.

8. The cage of claim 6, wherein the first and second circumferential members are attached to each other by at least one connecting strut.

9. The cage of claim 7, wherein the first and second circumferential members are attached to each other by at least one connecting strut.

10. The cage of claim 8, wherein the connecting strut is attached at bending regions of the first and second circumferential members.

11. The cage of claim 9, wherein the connecting strut is attached at bending regions of the first and second circumferential members.

12. The cage of claim 8, wherein the connecting strut is made from a different material than the proximal strut and distal strut.

13. The cage of claim 8, wherein the connecting strut is independently capable of expanding or contracting when subjected to a certain amount of force.

14. The cage of claim 8, wherein the connecting strut has an S-shape.

15. The cage of claim 14, wherein the S-shape of the connecting strut is capable of expanding or contracting when subjected to a certain amount of force.

16. The cage of claim 6, further including a plurality of proximal struts attached to bending regions located on the first circumferential member.

17. The cage of claim 16, further including a plurality of distal struts attached to bending regions located on the second circumferential member.

18. The cage of claim 1, wherein each bending region is located about 180 degrees apart from the other on the circumferential member.

19. The cage of claim 1, wherein each bending region has a substantial U shape.

20. The cage of claim 19, wherein each U-shaped bending region is oriented opposite each other.

21. The cage of claim 6, wherein each bending region is located about 180 degrees apart from the other on the circumferential member.

22. The cage of claim 6, wherein each bending region has a substantial U shape.

23. The cage of claim 22, wherein each U-shaped bending region is oriented opposite each other.

24. An expandable cage for an embolic filtering device used to capture embolic debris in a body vessel, the cage comprising:

a proximal circumferential member adapted to move between a collapsed position and an expanded position, the proximal circumferential member including a plurality of bending regions formed therein;

a distal circumferential member adapted to move between a collapsed

position and an expanded position, the distal circumferential member including a plurality of bending regions formed therein, the proximal circumferential member being connected to the distal circumferential member;

10                   a proximal strut attached to the proximal circumferential member; and  
                    a distal strut attached to the distal circumferential member.

25.     The cage of claim 24, wherein the proximal strut and distal strut are attached to the proximal and distal circumferential members at bending regions.

26.     The cage of claim 25, further including a plurality of proximal struts attached to bending regions located on the proximal circumferential member.

27.     The cage of claim 26, further including a plurality of distal struts attached to bending regions located on the distal circumferential member.

28.     The cage of claim 24, further including another circumferential member attached to and located between the proximal circumferential member and the distal circumferential member.

29.     The cage of claim 24, wherein the proximal and distal circumferential members are attached to each other by at least one connecting strut.

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30. The cage of claim 29, further including a plurality of connecting struts connecting to bending regions formed on the proximal and distal circumferential members.

31. The cage of claim 29, wherein the connecting strut is attached at bending regions of the proximal and distal circumferential members.

32. The cage of claim 29, wherein the connecting strut is made from a different material than the proximal strut and distal strut.

33. The cage of claim 29, wherein the connecting strut is independently capable of expanding or contracting when subjected to a certain amount of force.

34. The cage of claim 29, wherein the connecting strut has an S-shape.

35. An expandable cage for an embolic filtering device used to capture embolic debris in a body vessel, the cage comprising:

a proximal circumferential member adapted to move between a collapsed position and an expanded position, the proximal circumferential member

5 including a plurality of bending regions formed therein;

a distal circumferential member adapted to move between a collapsed position and an expanded position, the distal circumferential member including a plurality of bending regions formed therein, the proximal circumferential member being connected to the distal circumferential member;

10 a plurality of proximal struts attached to the proximal circumferential member; and

a plurality of distal struts attached to the distal circumferential member.

36. The cage of claim 35, wherein each of the proximal struts is attached to a bending region on the proximal circumferential member and each of the distal struts is attached to a bending region on the distal circumferential member.

37. The cage of claim 35, further including another circumferential member attached to and located between the proximal circumferential member and the distal circumferential member.

38. The cage of claim 35, wherein the proximal and distal circumferential members are attached to each other by at least one connecting strut.

39. The cage of claim 35, further including a plurality of connecting

struts which connect the proximal circumferential member to the distal circumferential member.

40. The cage of claim 39, wherein each connecting member is attached at a bending region on each of the proximal and distal circumferential member.

41. An embolic filtering device used to capture embolic debris in a body vessel, comprising:

a guide wire having a proximal end and a distal end; and

an expandable filter assembly mounted near the distal end of the

guide wire, the filter assembly including a self-expanding cage having a circumferential member adapted to move between a collapsed position and an expanded position, the circumferential member including a plurality of bending regions formed therein, a proximal strut attached to the circumferential member, a distal strut attached to the circumferential member, and filter element attached to the expandable cage.

42. The filtering device of claim 41, wherein the proximal strut has one end rotatably mounted to the guide wire.



43. The filtering device of claim 41, wherein the proximal strut and distal strut are attached to the circumferential member at bending regions.

44. The cage of claim 41, further including a plurality of proximal struts attached to bending regions located on the circumferential member.

45. The cage of claim 44, further including a plurality of distal struts attached to bending regions located on the circumferential member.

46. The filtering device of claim 45, wherein the proximal strut and distal strut are attached to the circumferential member at bending regions.

47. An embolic filtering device used to capture embolic debris in a body vessel, comprising:

a guide wire having a proximal end and a distal end; and

an expandable filter assembly mounted near the distal end of the

5 guide wire, the filter assembly including a self-expanding cage having a proximal circumferential member adapted to move between a collapsed position and an expanded position, the proximal circumferential member including a plurality of bending regions formed therein, a distal circumferential member adapted to move between a collapsed position and an expanded position, the distal circumferential

10 member including a plurality of bending regions formed therein, the proximal circumferential member being connected to the distal circumferential member, a proximal strut attached to the proximal circumferential member, a distal strut attached to the distal circumferential member, and filter element attached to the expandable cage.

48. The cage of claim 47, wherein the proximal strut and distal strut are attached to the proximal and distal circumferential members at bending regions.

49. The cage of claim 47, further including a plurality of proximal struts attached to bending regions located on the proximal circumferential member.

50. The cage of claim 49, further including a plurality of distal struts attached to bending regions located on the distal circumferential member.

51. The cage of claim 47, further including another circumferential member attached to and located between the proximal circumferential member and the distal circumferential member.

52. The cage of claim 47, wherein the proximal and distal circumferential members are attached to each other by at least one connecting strut.

51. The cage of claim 47, further including a plurality of connecting struts connecting to bending regions formed on the proximal and distal circumferential members.

52. The cage of claim 51, wherein the connecting strut is attached at bending regions of the proximal and distal circumferential members.

53. The cage of claim 51, wherein the connecting strut is made from a different material than the proximal strut and distal strut.

54. An embolic filtering device used to capture embolic debris in a body vessel, comprising:

a guide wire having a proximal end and a distal end; and

an expandable filter assembly mounted near the distal end of the

5 guide wire, the filter assembly including a self-expanding cage having a proximal circumferential member adapted to move between a collapsed position and an expanded position, the proximal circumferential member including a plurality of bending regions formed therein, a distal circumferential member adapted to move between a collapsed position and an expanded position, the distal circumferential member including a plurality of bending regions formed therein, the proximal circumferential member being connected to the distal circumferential member, a

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plurality of proximal struts attached to the proximal circumferential member, a plurality of distal struts attached to the distal circumferential member, and filter element attached to the expandable cage.

55. The cage of claim 54, wherein each of the proximal struts is attached to a bending region on the proximal circumferential member and each of the distal struts is attached to a bending region on the distal circumferential member.

56. The cage of claim 54, further including another circumferential member attached to and located between the proximal circumferential member and the distal circumferential member.

57. The cage of claim 54, wherein the proximal and distal circumferential members are attached to each other by at least one connecting strut.

58. The cage of claim 54, further including a plurality of connecting struts which connect the proximal circumferential member to the distal circumferential member.

59. The cage of claim 58, wherein each connecting member is attached at a bending region on each of the proximal and distal circumferential

member.

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